REMARKS/ARGUMENTS

Applicant acknowledges receipt of the Office Action dated July 22, 2005, in which the Examiner maintained the rejection of claims 1-3, 10-11, 13, 18-22, 28-29, 31, 36-39, 45-46, 48 and 53-55 as obvious over Bugnion (US 6075938) in view of Derks (US 6810033 B2); maintained the rejection of claims 4-9, 12, 14-17, 23-27, 30, 32-35, 40-44, 47 and 49-52 as obvious over Bugnion (US 6075938) in view of Derks (US 6810033 B2) in combination with Bowman-Amuah (US 6697824), and added a rejection of claims 37-39, 45-46, 48, 53 and 62-64 as anticipated under § 102(e) by Devine (US 6397242 B1).

Applicant again thanks the Examiner for her thoroughness in preparing the Office Action. At the same time, Applicant respectfully submits that the rejections of the present claims must fail for the reasons set out below.

Status of the Claims

Claims 1-64 are pending. All claims are rejected

Rejections under 35 U.S.C. § 103(a)

In support of her rejection of claims 1-3, 10-11, 13, 18-22, 28-29, 31, 36-39, 45-46, 48 and 53-55 as obvious over Bugnion in view of Derks, the Examiner asserts that Bugnion teaches "a combination of innovative emulation of the Direct Memory Access engine and standard distributed file system protocols to support a global buffer catch that is transparently shared across all virtual machines. . . operating system allows applications to explicitly share memory region across virtual machine boundaries and server contains interface to setup these shared regions to allow processes running on multiple virtual machines to share memory. . . and the at least one virtual machine for each of said customers having a specification specified by the respective customer."

Applicant very respectfully points out that the passages cited by the Examiner in support of her assertion that Bugnion teaches the present invention, *i.e.* col. 5, lines 1-13 and col. 8, lines 56-66, simply do not support the Examiner's position. The cited lines read:

> The approach of the present invention offers two different possible solutions to handle applications whose resource needs exceed the scalability of commodity operating systems. First, a relatively simple change to the commodity operating system can allow applications to explicitly s hare [sic] memory regions across virtual machine boundaries. The monitor contains a simple interface to setup these shared regions. The operating system is extended with a special virtual memory segment driver to allow processes running on multiple virtual machines to share memory. For example, a parallel database server could put its buffer cache in such a

shared memory region and have query engines running on multiple virtual machines.

. . .

FIG. 1 shows how the virtual machine monitor allows multiple copies of potentially different operating systems to coexist. In this figure, five virtual machines coexist on the multiprocessor. Some virtual machines run commodity uniprocessor or multiprocessor operating systems, and others run specialized operating systems fine-tuned for specific workloads. The virtual machine monitor schedules the virtual resources (processor and memory) or the virtual machines on the physical resources of the scalable multiprocessor.

Like the rest of the Bugnion disclosure, these passages do not contain any mention of a "customer," "third party," or other term that could be construed in the manner asserted by the Examiner, or of providing "computer services" for the "customers."

Applicant again respectfully submits that the rejection over Bugnion is based on a fundamental misunderstanding as to what is claimed in the present application and what is disclosed in the cited art. Specifically, Bugnion discloses a virtual machine *monitor* that can be used to implement and supervise the operations of several virtual machines within a computer. Virtual machines, and the operation of virtual machines, are background art to both Bugnion and the present invention, having been known for several years. Bugnion's virtual machine monitor operates to set up and supervise, or "monitor", virtual machines within a computer, so as to enhance their operations.

However, Bugnion does not contemplate a system in which one or more virtual machine is set up for and by each of several customers to provide computer services for the customers. This concept of allowing multiple third parties to configure and control a plurality of virtual machines within a computer is entirely novel. As evidence of the novelty and non-obviousness of the presently claimed concepts, Applicants submit herewith an Affidavit of Geoffrey Donald Tremain, who is the inventor of the present case and an expert in the technology underlying this invention.

As set out in the Affidavit, until the present invention, virtual machines on a single computer were controlled by a single entity, often a single individual, and were typically used for diagnostic or comparative assessments of software (such as new applications or operating systems being developed by the individual). Neither Bugnion nor the other references discloses or suggests the use of plural virtual machines on a real computer *in which at least one virtual machine is set up*

by and for each of the customers, with each of those virtual machines having a specification that is specified by the respective customer.

As stated in the present specification, the problems solved by the present invention were significant and very real technical problems. At the time of the invention, entities who provided hosting services for multiple third parties (*i.e.* customers) either used multiple physical computers, with a respective real computer being dedicated to each customer, or resorted to a space-sharing system that did not allow the security and independence that are afforded by the present invention.

Despite the significant cost and maintenance implications for the provider, despite the need for a system that would avoid these problems, and despite the existence of virtual machines, until the present invention, no one had contemplated a system in accordance with the present invention. In the face of such a long-felt need, Applicants conception of the present invention is a patentable advance over the state of the art.

As discussed in the previous *Response* and in the enclosed Affidavit, Derks refers to "Private Virtual Networking", which is more commonly known as "virtual private networking" or "VPN." This technology relates solely to telephony and specifically to techniques for making a secure transmission channel over an insecure network. This has nothing whatsoever to do with virtual machine technology. Moreover, the examiner on page 3 of the office action of December 9, 2004 asserts that one having ordinary skill in the art at the time the invention was made would employ the teachings of Derks with the system of Bugnion because "it would allow to identify the gateway with the internet address carried by the set up request message and transmit data over the connection in order to address one out of more terminals connected to the remote gateway and set up a virtual connection." However, this statement does not support the examiner's position. Indeed, and again as set out in the enclosed Affidavit, it cannot be seen that this has any relevance to the present invention: the examiner's references to "gateway", "internet address", "terminals connected to the remote gateway" and "virtual connection" make no sense in the context of the present invention, which relates to an innovative use of virtual machines to provide computer services to customers. Hence, the combination of Derks with Bugnion simply *does not support* the present obviousness rejection.

Rejections under 35 U.S.C. § 102(e)

In support of her rejection of claims 37-39, 45-46, 48, 53 and 62-64, the Examiner cites Devine. However, as discussed in the enclosed Affidavit, in terms of its relevance to the present

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invention, Devine in essence discloses the same subject matter as Bugnion and is therefore equally irrelevant. In particular, as with Bugnion, Devine does not contemplate a system in which one or more virtual machine is set up for and by each of several customers to provide computer services for the customers. Hence, Devine does not anticipate claim 37, or claims 38, 39, 45, 46, 48, 53 and 62-64.

For all of the foregoing reasons, it is respectfully submitted that the invention of each independent claim is patentable. Because the rejection of the independent claims must fail, the rejection of claims 4-9, 12, 14-17, 23-27, 30, 32-35, 40-44, 47 and 49-52 as obvious over Bugnion in view of Derks in combination with Bowman-Amuah must also fail.

Affidavit

Applicant respectfully submits the attached Affidavit, which demonstrates why, in context of the state of the art to which this invention relates, the present claims describe a novel and non-obvious approach that was not contemplated by others. Indeed, others, when faced with the problems that are solved by the present invention, took burdensome and expensive steps because they did not have the benefit of the present concepts.

Conclusion

Applicant respectfully submits that the claims are in condition for allowance. If the Examiner has any questions or comments, or otherwise feels it would be advantageous, she is encouraged to telephone the undersigned at (713) 238-8043.

Respectfully submitted,

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